REMARKS/ARGUMENTS

In view of the foregoing amendments and the following remarks, the applicant respectfully submits that the pending claims comply with 35 U.S.C. § 112, are not anticipated under 35 U.S.C. § 102 and are not rendered obvious under 35 U.S.C. § 103. Accordingly, it is believed that this application is in condition for allowance. **If, however, the Examiner believes that there are any unresolved issues, or believes that some or all of the claims are not in condition for allowance, the applicant respectfully requests that the Examiner contact the undersigned to schedule a telephone Examiner Interview before any further actions on the merits.**

The applicant will now address each of the issues raised in the outstanding Office Action.

Rejections under 35 U.S.C. § 112

Claim 4 stands rejected under 35 U.S.C. § 112 because there is insufficient antecedent basis for a term used in the claim. Since claim 4 has been amended to ensure proper antecedent basis, this ground of rejection should be withdrawn.

Rejections under 35 U.S.C. § 102

Claims 1-3 and 5-6 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,549,653 ("the Osawa patent"). The applicant respectfully requests that the Examiner reconsider and

withdraw this ground of rejection in view of the following.

Independent claim 1 is not anticipated by the Osawa patent because the Osawa patent does not describe a tristimulus value calculation means that calculates the tristimulus value by using spectral reflectance data of a color chip formed from a plurality of unit color chips and color chip sensing data obtained by sensing the color chip with an input device **under observation illumination light**. Claim 1 is reprinted below with this feature depicted in bold typeface:

> A color reproduction system comprising:
>
> tristimulus value calculation means for calculating tristimulus values under observation illumination light corresponding to a spectral reflectance of an object, said tristimulus value calculation means calculating the tristimulus values using spectral reflectance data of a color chip formed from a plurality of unit color chips, **color chip sensing data obtained by sensing the color chip with an input device under the observation illumination light**, spectral sensitivity data of said input device, and color matching function data;
>
> means for calculating an output color image signal based on the calculated tristimulus values; and
>
> means for outputting a color image based on the output color image signal. [Emphasis added.]

This feature is discussed below.

Claim 1 recites the calculation of the tristimulus value of the object **under observation illumination light** when the spectrum data of the observation illumination

light, which is required for the calculation of the tristimulus value after the spectral reflectance data of the object is calculated, cannot be measured. That is, it discloses a structure which displays an image of an object taken under a sensing illumination light as if the object were under an observation illumination light. It does so by calculating the tristimulus value using the signal of the color chip (whose spectral reflectance data is already-known) shot by the input device (whose spectral sensitivity data is already-known) under the observation illumination light.

On the other hand, the Osawa patent discloses calculation of spectral reflectance data of an object by using color chip sensing data obtained by sensing a color chip under **the same illumination light as that used when shooting the object**. (See, e.g., Figures 1 and 8, elements 2 and 3 under illumination A.) Even in an embodiment showing the object and the reference chart having separate illumination (See, e.g., Figure 12.), the illumination of the reference chart is not an observation illumination light (i.e., the light under which the displayed image is observed). The Osawa patent describes that the spectral reflectance data of an object can be obtained by using a shooting signal of a color chip whose spectral reflectance data is already known, even in the case where spectral sensitivity data and spectrum data of sensing illumination light of the input device to shoot an object is not known. In the Osawa patent, a tristimulus value is calculated by performing wavelength integration -- that is, by multiplying the spectral reflectance data of the object by the spectrum data of the sensing illumination light obtained by some

measurement and predetermined color matching function data.

However, this does not teach the claimed "tristimulus value calculation means [that] calculates the tristimulus value by using spectral reflectance data of a color chip formed from a plurality of unit color chips and color chip sensing data obtained by sensing the color chip with an input device **under observation illumination light**." (Emphasis added.) That is, with the invention of claim 1, the tristimulus value is determined from a color chip as illuminated by a observation illumination light, not as illuminated by an subject object illumination light or some other illumination. Accordingly, claim 1 is not anticipated by the Osawa patent for at least this reason. Since each of claims 2, 3, 5 and 6 depends from claim 1, these claims are similarly not anticipated by the Osawa patent.

Rejections under 35 U.S.C. § 103

Claims 7-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,793,884 ("the Farrell patent") in view of U.S. Patent No. 5,668,596 ("the Vogel patent"). The applicant respectfully requests that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Independent claims 7 and 11 are not rendered obvious by the Farrell and Vogel patents, either taken alone, or in combination, because these patents neither teach, nor suggest, a color reproduction system comprising "second image sensing means for sensing a color chip under

observation illumination light", and "means for calculating tristimulus values of the object under the observation illumination light on the basis of the output spectral reflectance image data, color chip image data of the color chip sensed by said second image sensing means." Independent claims 7 and 11 are reprinted below with these features depicted in bold typeface:

> 7. A color reproduction system comprising:
>
> first image sensing means for sensing an object under sensing illumination light;
>
> means for calculating a spectral reflectance of image data of the object sensed by said first image sensing means on the basis of spectral sensitivity data of said first image sensing means, spectrum data of the sensing illumination light, statistic data of a spectral reflectance of the object, and outputting spectral reflectance image data corresponding to the calculated spectral reflectance;
>
> **second image sensing means for sensing a color chip under observation illumination light;**
>
> **means for calculating tristimulus values of the object under the observation illumination light on the basis of the output spectral reflectance image data, color chip image data of the color chip sensed by said second image sensing means, spectral sensitivity data of said second image sensing means, color chip spectral reflectance data representing a spectral reflectance distribution of the color chip, and color matching function data;**

means for calculating an output color image signal on the basis of the calculated tristimulus values; and

means for outputting a color image on the basis of the output color image signal. [Emphasis added.]

Claim 11 (original): A color reproduction system comprising:

first image sensing means for sensing an object under sensing illumination light;

means for outputting expansion coefficient data which is represented as a linear sum of basis functions of a spectral reflectance of the object on the basis of spectral sensitivity data of said first image sensing means, spectrum data of the sensing illumination light and statistic data of a spectral reflectance of the object;

second image sensing means for sensing a color chip under observation illumination light;

means for calculating tristimulus values of the object under the observation illumination light on the basis of the output expansion coefficient data, color chip image data of the color chip sensed by said second image sensing means, spectral sensitivity data of said second image sensing means, color chip spectral reflectance data representing a spectral reflectance distribution of the color chip, and color matching function data;

means for calculating an output color image signal on the basis of the calculated tristimulus values; and

means for outputting a color image on the basis of the output

color image signal. [Emphasis added.]

These features are discussed below. First, however, the Farrell and Vogel patents are discussed.

The Farrell patent discusses means for calculating spectral reflectance image data of an object. The Examiner states that elements 10 and 11 of Figure 8 of the Farrell patent disclose the first image sensing means and the second image sensing means. However, since the Farrell patent only includes Figures 1-7B, the applicant believes that the Examiner meant to cite elements 10 and 11 of Figure 8 of the Vogel patent.

In the Vogel patent, features 10 and 11 of Figure 8 are not used separately as the first sensing means for sensing the object under the sensing illumination light and the second sensing means for sensing the color chip under the observation illumination light, as recited in claims 7 and 11 of the present application. It is clear that they are shown as two alternative sensing means. The Farrell patent does not compensate for this deficiency of the Vogel patent with respect to claims 7 and 11.

In the Vogel patent, a conversion parameter is set to decrease an error between the tristimulus value of the color chip **which has been measured in advance** and the tristimulus value which has been estimated from the shooting signal of the camera, thereby reproducing the color of the object by performing conversion of the shooting image data using the conversion parameter which has been set, and making compensation for the color differences generated in different cameras. However,

since **the Vogel patent does not distinguish the sensing illumination light from the observation illumination light**, its disclosure is limited to the case where the sensing illumination light and the observation illumination light is the same.

In view of the foregoing, claims 7 and 11 are not rendered obvious by the Farrell and Vogel patents. Since each of claims 8-10 and 12-14 depends from claim 7 and 11, respectively, these claims are similarly not rendered obvious by these patents.

CONCLUSION

In view of the foregoing amendments and remarks, the applicant respectfully submits that the pending claims are in condition for allowance. Accordingly, the applicant requests that the Examiner pass this application to issue.

Respectfully submitted,

July 13, 2004

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CERTIFICATE OF MAILING under 37 C.F.R. 1.8(a)

I hereby certify that this correspondence is being deposited on **July 13, 2004** with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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